

HOW WELL CAN OVERACTIVE BLADDER SYMPTOMS BE OBJECTIVELY MEASURED?

Aims of Study

The latest definition of overactive bladder, as recommended by the ICS, represents the existence of urgency, with or without urge incontinence, usually with diurnal and nocturnal frequency. As with every developing clinical entity, it would be useful if the subjective symptoms of overactive bladder also can be measured objectively. Two important tools in the diagnosis of bladder symptoms are the bladder diary and urodynamic studies. The aim of our study was to determine what differences in objective measurements can be found for each individual overactive bladder symptoms as well as for the combination of symptoms.

Methods

Sixty-seven women with urinary symptoms, who were scheduled for urodynamic investigation, were asked to self-complete a questionnaire and to complete a 48-hour bladder diary. Urogynaecological examination and urine culture ruled out local pathology. Among others, the questionnaire consisted of the Urogenital Distress Inventory (UDI).⁽¹⁾ Following the recommendation of the ICS, and in concordance with other studies, we selected three questions from the UDI. A woman was considered to experience diurnal frequency if she replied positively to the question: "Do you experience frequent urination?", urgency if she replied positively to the question: "Do you experience a strong feeling of urgency to empty the bladder?" and nocturnal frequency if she replied positively to the question: "Do you experience frequent urination at night?".

The bladder diary recorded the number of diurnal voiding (DV), nocturnal voiding (NV), minimum voided volume (VOL_{min}), maximum voided volume (VOL_{max}), and the mean volume voided per micturition (VOL_{mean}) was calculated. From the filling cystometry (filling at 50 ml/min) the volume at first desire, volume at normal desire, volume at strong desire, and volume at maximum bladder capacity were used in this study.

Because urogenital symptoms often occur in combination, we used an ANOVA model with experimental design to separate the main effect of diurnal frequency, urgency and nocturnal frequency from possible interactions on scores from the bladder diary and volumes of the filling cystometry. Values are expressed as F-values. A F-value of > 4,0 is statistically significant at $p < 0.05$. All statistics were performed with SPSS 10.0.

Results

Table 1 shows the results of the ANOVA for the main effects of the three symptoms on the items from the bladder diary. Since the F-values do not show the direction of the effect we would like to add that the symptoms of diurnal frequency was associated with a higher 24-hour voiding frequency and a lower VOL_{max} and a lower VOL_{mean}. As expected, the symptom of nocturnal frequency was associated with a higher nocturnal voiding frequency. Only one significant two-way interaction was found.

Table 1.

SYMPTOMS	DV	NV	DV + NV	VOL _{min}	VOL _{max}	VOL _{mean}
Main effect						
Diurnal frequency	3,94	1,91	4,49*	0,77	13,24*	8,49*
Urgency	2,35	3,82	0,37	0,12	0,57	0,09
Nocturnal frequency	0,21	6,13*	1,49	0,06	0,88	1,37
<i>2 way interaction</i>						
frequency*urgency	0,54	0,42	0,15	1,14	4,90*	2,56
frequency*nocturia	0,03	0,15	0,00	0,05	0,06	0,27
urgency*nocturia	1,54	1,98	2,28	2,01	0,20	0,76
<i>3 way interaction</i>						
	3,36	0,05	2,56	0,00	0,07	0,06

In the ANOVA model for the overactive bladder symptoms and the volumes recorded with filling cystometry, we could only demonstrate a significant effect for the diurnal frequency symptom. The frequency symptom was associated with a lower volume at first desire ($F = 5.2$), lower volume at normal desire ($F = 11.0$), lower volume at strong desire ($F = 4.7$) and lower volume at maximal bladder capacity. Surprisingly, the presence or absence of the symptom of urgency alone did not reflected itself in significant differences in bladder volumes at filling cystometry. The only significant interaction was the three way interaction of diurnal frequency, urgency and nocturnal frequency on the first desire to void volume ($F = 6.6$).

Conclusions

The diurnal frequency symptom is the main symptom from the overactive bladder syndrome that is associated with objectively measurable differences. The symptom of urgency is most likely to subjective to be recorded objectively. The symptom of urgency will only reflect itself in an increased voiding frequency and low filling cystometry volumes in the presence of the diurnal frequency symptom. Therefore, we believe that the presence of the diurnal frequency symptom is essential in making a diagnosis of overactive bladder.

- (1) Schumaker SA, Wyman JF, Uebersax JS, *et al.* Health related quality of life measures for women with urinary incontinence: The Urogenital Distress Inventory and Incontinence Impact Questionnaire. *Quality Life Res* 1994;3:291-306